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| APPLICATION NO.                                                                               | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|-----------------------------------------------------------------------------------------------|-------------|----------------------|----------------------|------------------|
| 10/722,512                                                                                    | 11/28/2003  | Yasushi Shinjo       | 245842US0RDDIV       | 7665             |
| 22850                                                                                         | 7590        | 01/25/2005           | EXAMINER             |                  |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.<br>1940 DUKE STREET<br>ALEXANDRIA, VA 22314 |             |                      | RODEE, CHRISTOPHER D |                  |
|                                                                                               |             |                      | ART UNIT             | PAPER NUMBER     |
|                                                                                               |             |                      | 1756                 |                  |
| DATE MAILED: 01/25/2005                                                                       |             |                      |                      |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/722,512

Applicant(s)

SHINJO ET AL.

Examiner

Christopher RoDee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12,13,22,23,25 and 27-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 36 and 37 is/are allowed.
- 6) ☒ Claim(s) 12,13,22,23,25 and 27-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### ***Response to Amendment***

The indicated allowability of claim 24 is withdrawn in view of the newly discovered reference(s) to JP 55-071713. Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 12, 13, 22, 23, 25, and 27-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 55-071713 in view of *Handbook of Imaging Materials* to Diamond, pp. 231-236, and further in view of Kmiecik-Lawrynowicz *et al.* in US Patent 5,364,729.

The Japanese document discloses a resin dispersion that is used to make an electrophotographic liquid developing agents (trans. p. 3). The resin of the dispersion is a graft polymer as seen in the non-aqueous polymerization process (trans. pp. 2-3) and contains an acrylic monomer component of the General Formula I and another acrylic monomer component given by the formulae II or III. Advantages of the graft polymer dispersion of the reference as compared to the prior art include reduced aggregation and precipitation of the particles, a narrow particle size distribution and a decreased particle size (trans. pp. 4-5). The JP document also teaches the addition of wax to a suspension of the graft copolymer, heating of the wax above its melting point, and cooling in order to precipitate the wax. The graft copolymer covers the wax in this embodiment to form suspended particles.

The reference does not specify the specific steps of forming the electrostatic liquid developer from the resin dispersion, but Diamond teaches milling as a conventional procedure in the formation of liquid developers. The resin, colorant, and other components are dispersed in the non-aqueous liquid through the use of the mill (p. 234). Diamond also teaches useful colorants for liquid developers, such as those specified in Table 6.2 (pp. 234-5), and discloses useful aliphatic hydrocarbon carrier liquids (pp. 231-2), such as the isoparaffins disclosed in Table 6.1, which are electrically insulating. Suitable charge directors are also disclosed as common additives to the liquid developers.

Kmiecik-Lawrynowicz teaches that heating a mixture of resin and colorant below the Tg of the resin while stirring or shearing causes the particles to become bound together (Abstract; col. 10, l. 24-42).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to mill the resin and a colorant to form the liquid developer suggested by the JP reference because the JP reference teaches formation of an electrophotographic liquid developer and the artisan would recognize, in view of Diamond's teachings, the milling of resin and colorant components to give a developer dispersion is conventional in the art for this purpose. The artisan would also have found it obvious to use conventional colorant(s), dispersant(s) (i.e., carrier liquids), and charge director(s), as discussed in Diamond, to produce a liquid toner because Diamond teaches materials as liquid developer components that are well known in the art for the stated purpose. Milling below the Tg of the graft copolymer (i.e., without heating) would have been obvious to avoid aggregation of the copolymer, which is specifically discouraged by the reference. Kmiecik-Lawrynowicz teaches that heating of resin particles can increase the likelihood of aggregation and coalescence, which is specifically discouraged by the JP document. The artisan would also have found it obvious to optimize the resin Tg to ensure

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that the milling of pigment and resin occurs below the resin Tg given the teaching of Kmiecik-Lawrynowicz.

***Allowable Subject Matter***

Claims 36 and 37 are allowed.

All previously applied grounds of rejection are overcome by applicant's amendments.

***Conclusion***

The IDS filed 14 December 2004 has been considered.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdr  
24 January 2005

  
CHRISTOPHER RODEE  
PRIMARY EXAMINER